



Tahoe Regional Planning Agency

*...leading the cooperative effort to preserve, restore
and enhance the unique natural and human
environment of the Lake Tahoe Region.*

A Property Owner's Guide to IMPROVING WATER QUALITY

HOMEOWNER'S CAN HELP IMPROVE WATER QUALITY

Lake Tahoe is losing its crystal water clarity at the alarming rate of more than a foot a year. At the current rate of decline, Lake Tahoe will lose its blue brilliance in just 40 years. This loss of clarity is due primarily to the impacts of the residential, commercial, and recreational development of the Lake Tahoe Region over the last four or five decades.

The good news is that there are positive steps we can take to reverse the trend towards further decline. All homeowners can take measures on their own property to control the primary sources of pollution. These pollution control measures are commonly referred to as Best Management Practices, or BMPs.

The Local Need for BMPs

At Lake Tahoe, we define BMPs as “structural and nonstructural practices proven effective in soil erosion control and management of surface runoff in the Lake Tahoe Region.” Eroding soils and surface water runoff transport pollutants, particularly plan nutrients and sediments, to the Region’s rivers and streams and to Lake Tahoe.

The increase in the algae population of Lake Tahoe and the corresponding decline in water clarity are directly attributable to the flow of non-point source pollutants into the Region’s water bodies. The only way we can control this source of pollution from developed areas is to implement Best Management Practices on a wide scale.

BMPs: Keeping It Simple

BMPs’s do not have to be complicated to be effective. In fact, the most effective BMPs are those which mimic natural conditions.

A relatively simple revegetation project can enhance the natural beauty of your property AND have a significant positive environmental impact! Other examples of BMPs include retaining structures, such as timber walls; rock-lined infiltration trenches along roof drip lines and other impervious surfaces; and paved driveways.

Expanding the Use of BMPs

BMPs are so important at Lake Tahoe that TRPA requires they be implemented on all new projects in the Basin. Whether the project is a new home or new hotel, the owner is required to implement temporary BMPs while construction is underway and permanent BMPs once the project is finished.

By linking BMP implementation to projects which require TRPA permits, however, we were reaching only some of the properties which need BMPs. Many property owners have no plans for future projects, and so may never be subject to the BMP requirements of a TRPA permit.

In order to achieve the Region’s water quality goals, we are now turning our attention to those properties as well.

THE BMP RETROFIT PROGRAM

With help from our partners who share the responsibility for protecting Lake Tahoe's water quality, TRPA is implementing a BMP Retrofit Program which will result in the use of BMPs on thousands of additional properties by the year 2011.

The Retrofit Program will be phased in, starting with Priority One watersheds. Priority One watersheds require immediate attention because they tend to have steeper terrain, a higher ratio of development to undisturbed land, and more highly erosive soils. In other words, they tend to produce more sediment and nutrient flow than other areas of the Basin. (See the map to determine whether you live in a Priority One, Two, or Three watershed.)

Property owners in Priority One watersheds are being asked to take positive action to implement BMPs on their property by October 15, 2000. Subsequent target dates for full implementation of BMPs are October 15, 2006, in Priority Two watersheds and October 15, 2011, in Priority Three watersheds.

HELP IS AVAILABLE!

All property owners are strongly encouraged to call TRPA to request a site assessment. Staff from TRPA and our partner agencies are standing by to help you design an appropriate BMP plan for your property.

CALL NOW
For Your BMP Site Assessment
(702) 588-4547 ext. 217

Some homeowners may be able to conduct their own site assessment using the do-it-yourself form provided. **However, all homeowners are urged to call the above number, anyway, to get their property "checked off" as having been retrofitted with BMPs.**

TRPA, with help from our partners, will also be holding a series of neighborhood workshops to talk about BMPs and how they are used. You will receive notification of the workshops through the mail.

Everybody's Solution is Different

Some homeowners may find they need to do little work because soil erosion and surface water runoff are already controlled through landscaping and other improvements. If the property is already adequately vegetated, all slopes are stabilized, the driveway is paved, and all runoff is effectively infiltrated, the property may already be in compliance with the BMP Retrofit Program.

The whole purpose of the BMP Retrofit Program is to prevent the problem, not to require all homeowners to take identical measures, which may or may not be appropriate. Application of BMPs requires a flexible approach which takes into account site-specific considerations.

BMPs Everybody's Doing It

Residential property owners are not the only ones who are required to implement BMPs. Here's what others are doing:

- ❑ All commercial property owners must either meet the requirements of the BMP Retrofit Program, or, if the property is one acre or larger, must receive a waste discharge permit from the state water resources agencies or must have a TRPA-approved BMP plan.
- ❑ All recreation properties, including ski areas, marinas, and golf courses, must also receive waste discharge permits or an approved BMP Plan.
- ❑ Public land owners, including the state transportation, parks, and forestry departments, must receive waste discharge permits or an approved BMP plan.
- ❑ The U.S. Forest Service must meet federal requirements to implement BMPs in back country areas (e.g., revegetating old dirt roads) and in developed areas (e.g., drainage systems in campgrounds, parking lots).

BASIC BEST MANAGEMENT PRACTICES

Paved Driveways

A paved driveway is one of the most effective BMPs a homeowner can implement. Storm water flows right off a compacted dirt driveway. Also, vehicle tires, snow removal, and other disturbances carry dirt from unpaved driveways into the street storm drain system.

Soil erosion and storm water runoff can be controlled with a properly designed paved driveway.

Driveways should be designed to preserve natural vegetation and to blend with the natural landform. Slotted drains or other flow interceptors may be needed to convey surface runoff to infiltration structures or stabilized drainage areas, usually at the driveway edge. Properly designed paved driveways will collect and, ideally, infiltrate sheet flow runoff and will prevent any surface runoff from flowing into the streets and drainages.

Paved driveways should be designed and installed by qualified professionals. In the City of South Lake Tahoe and El Dorado County, contact your local building department for an over-the-counter driveway paving permit. If your property is in Placer, Washoe, or Douglas County, contact TRPA.

Infiltration

Whenever possible, naturally vegetated areas should be protected and used for infiltration. The natural plant-soil complex can treat runoff better than any artificial infiltration system.

Artificial systems must be used along impervious surfaces and driplines when natural vegetation isn't present or is inadequate to infiltrate all the flow. Infiltration systems allow water to percolate through the soil, a process which filters and cleanses surface runoff of sediment and nutrients before it is discharged into rivers, streams and lakes as groundwater.

An infiltration trench is a shallow rock- or gravel-filled trench located at drip lines or adjacent to other impervious surfaces where runoff collects or concentrates. Dry wells, stone- or gravel-filled pits, or French Drains are used when additional storage capacity for runoff is needed or as alternatives to infiltration trenches on steeper slopes.

Retaining Structures/Slope Stabilization

A retaining structure is a wall or other structure placed at the bottom of an oversteepened slope to prevent erosion. Retaining structures, including terraces, steps and other landscaping techniques, can be made of wood, rock, brick, or concrete block.

BASIC BEST MANAGEMENT PRACTICES

The use of native vegetation along the top of and around retaining structures can increase the structure’s effectiveness.

Vegetation alone and rock rip-rap (a layer of loose rock placed on an erodible surface) are also effective slope stabilization techniques. Implementation of this BMP may require a permit from TRPA or your local building department, depending on the height of the structure and the amount of soil to be moved. Staff people from those agencies will be happy to help determine whether a permit is needed.

Vegetation

Vegetation stabilizes soil, reduces raindrop impact, reduces velocity of surface runoff, prevents wind and water erosion, and enhances natural beauty. A relatively simple plan to plant native grasses, shrubs and other plants can be a highly effective BMP. Lists of approved plant species are available from TRPA, you local Resource Conservation District, and the Nevada Cooperative Extension.

The use of native and adapted plants is a Best Management Practice because those species require less fertilizer and irrigation than other species.

Fertilizer application must be carefully managed to prevent excess plant nutrients from reaching surface and groundwater. Irrigation must be monitored to prevent overwatering and added surface runoff. Wood chip and bark mulches may be used for temporary stabilization or as permanent ground cover and round trees and shrubs.

ENFORCEMENT OF THE BMP PROGRAM

TRPA and our partners are relying heavily on voluntary compliance with the BMP Retrofit Program. We will provide homeowners with as much information as we can through the mail, at our neighborhood workshops, and by visiting your property at your invitation. With that information, we hope homeowners will implement whatever BMPs are needed to correct erosion and runoff problems.

Once homeowners have had a reasonable amount of time in which to comply, TRPA will begin taking note of properties which discharge noticeable amounts of sediment and storm water to the street and strom drainage system. We will notify those property owners that there is a significant problem on their property and will work with them to correct it.

In the long run, TRPA may have to take corrective action on a larger scale. The BMP Retrofit Program is a critical component of the Lake Tahoe Basin water quality improvement plan. If we don’t achieve success with the existing water quality improvement plan, TRPA will be required to adopt additional water quality control measures which could have regional impacts on future opportunities for orderly growth and development at Lake Tahoe.

DO-IT-YOURSELF SITE ASSESSMENT

Take this worksheet on a stroll across your property. You may want to start where the driveway meets the street and work your way back. The questions are arranged in the order in which you may want to prioritize installation of BMPs on your property.

■ Are the access road or driveway and/or an area for two onsite parking spaces unpaved? ☐ Yes ☐ No

Paving legally established roads, driveways and parking areas is the #1 priority BMP. Paving is an improvement which will add value to your property and will be appreciated in every season for years to come.

■ Do rain and snowmelt runoff flow from the driveway off the property to the street? ☐ Yes ☐ No

Driveways should slope toward an infiltration trench installed on the downslope side, or have a swale which convey runoff to a drywell, or be constructed with a slotted drain which drains to a drywell.

■ Are there any channels or gullies from man-modified drainages or heavy rains on your property? ☐ Yes ☐ No

Small waterways should be shaped and lined with rocks and/or grass to convey water at non-erosive velocities through your property. Determination of the appropriate shape, size and materials should be made by a qualified professional.

■ Are there unstabilized cut slopes or fill slopes along the driveway, front or back of the house, or elsewhere? ☐ Yes ☐ No

Retaining walls, rock slope protection, and vegetation may be used separately and in combination to stabilize eroding slopes. Retention of topsoil is critical to successful landscaping, and stable slopes are an indication of a property well cared for.

■ Are there any sizable areas of bare soil which need landscaping or a duff layer to control dust and soil erosion? ☐ Yes ☐ No

Native or adapted plants hold soil in place, help infiltrate runoff, and enhance the beauty of your property. Once established, they require less water and fertilizer than non-native plants. Pine and fir needles form a duff layer which also protects soil.

■ Are there channels or gullies forming from driplines beneath the eaves on the house and garage? ☐ Yes ☐ No

If dripline areas are already well-vegetated or have a good duff cover, additional BMPs may not be needed. If not, infiltration trenches or drywells at rain gutter downspouts will increase drainage capacity of these areas. These drainage facilities look and perform better if they are wood framed. Drain rock sized from 3/4” to 1-1/2” is recommended.

■ Do you have an elevated deck with bare dirt below? ☐ Yes ☐ No

A 1” to 3” layer of gravel spread evenly over the bare area will dissipate drip impact erosion and improve infiltration. Use wood borders to keep the gravel in place on sloping ground. If it will grow, vegetation can also be used to control erosion and runoff.

These guidelines were made general for ease of understanding and wide applicability. Every property is different. Adequate BMP requirements and correct installation can be accurately determined with a site assessment by a professional with your local Resource Conservation District. We encourage you to contact your local office at (530) 541-5654 for some friendly, professional advice.



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